Perceptive Process Mining

Getting Started Guide

Version: 2.6.x

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Overview

This guide introduces Perceptive Process Mining and explains how to use this product. The following sections guide you through the procedure of loading data into Perceptive Process Mining, mining each process, filtering on datasets, and creating graphic representations of your data.

Note If you have Perceptive Process Mining installed on your machine but want to upgrade, you must uninstall the existing version and reinstall the latest version. You can uninstall the product without losing any data. Contact your administrator before upgrading your version of Perceptive Process Mining.

About Perceptive Process Mining

Perceptive Process Mining is a web-based, process-mining tool that allows you to analyze business processes within your organization based on historical data. This product provides a visual representation of process data, which offers an accurate and objective view of the inner workings and dynamics of your operation. Process mining lets you analyze bottlenecks, identify critical resources, evaluate workload distribution and review historical information about your processes.

Process Mining mines your workflow data. The mining functionality lets you manage the level of detail in your process models using filtering options. This allows you to visualize the interactions within your business environment, pinpoint bottlenecks, evaluate the flow of information, and assess the effectiveness of people, departments, and process designs throughout your organization.

Getting Started

Connect to Perceptive Process Mining

Perceptive Process Mining is installed as a Windows service that starts automatically. Perceptive Process Mining uses the LocalService user account and the standard HTTP port (80). Use the Windows Service Manager to start, stop, and restart the Perceptive Process Mining service.

1. In the Windows **Start** menu, select **Perceptive Process Mining** > **Open Perceptive Process Mining**.

2. In the **Log into Perceptive Process Mining** dialog box, in the **Username** field, type a valid user account name. In the **Password** field, type the password associated with your user account.

3. Click **Remember username** if you want the system to automatically populate the field the next time you log in.

4. Click **Log in**.

Disconnect from Perceptive Process Mining

To disconnect from Perceptive Process Mining, click your user name in the toolbar and then click the **Logout** button. This action disconnects you from the application and returns you to the login dialog box.

Perceptive Process Mining users

Perceptive Process Mining users are individuals who are involved in any aspect of business processing. The process of extracting workflow data and importing that information into Perceptive Process Mining is

made possible through the dataset management settings. Once the data is available, you can begin the mining process.

Perceptive Process Mining provides more than one way for you to import your data. The type of user you represent determines the format in which data is imported.

- **Standalone**. A standalone user is traditionally a Systems, Applications and Products (SAP) user who works outside a large IT community. In a standalone environment, you do not need to authenticate through a specified server. You import data using multiple file formats such as a comma-separated value (CSV) file format, and you import data from a database.

- **Standard**. A standard user imports workflow data from the ImageNow Server in a Perceptive (PRI) format. You can take existing data, stored on the server, and import the data to Perceptive Process Mining. From there, you can mine the information and analyze the results.

- **Enterprise**. An enterprise user can authenticate through the ImageNow Server or use a standalone environment. The user has the advantage of importing data in multiple file formats, including PRI, CSV, and from a database.

About the help system

Product Help is designed to provide you with information so you can complete tasks in any ImageNow product and learn about its features. When you are not sure how to move forward with the next step in a procedure, open Help, select the Index or Search tab, and search for the information you want. Topic titles in the Contents tab use the following naming scheme:

- Procedure, or How To, topics begin with a verb, such as "Add a user," and usually contain numbered steps.

- Concept topics begin with "About" or "What is." These topics cover a feature area or subsystem and give you an overview of the procedures that are documented for that area.

- Reference topics contain tables of information in which you find a description of how a user interface element works. In addition, reference topics appear throughout programmatic help to explain API calls, iScript objects, and Message Agent functionality.

- Troubleshooting topics begin with "Troubleshoot" and outline an issue you may be having. These topics offer a solution, typically in step-by-step format.

Perceptive Software regularly publishes new and updated help topics to the Perceptive Software website. Go to www.imagenow.com, click **Customer Portal**, log in, click **Product Documentation**, and then click the appropriate product version to view the latest help information.

Contact Product Support

Before you contact Product Support, go to www.perceptivesoftware.com, log into the Customer Portal, select the Product Documentation tab and your product version, and then search for an answer to your question. This website includes the most recent updates of Help content and PDF documentation. You must be a registered user to access the Customer Portal.

Product Support is available 24 hours a day, seven days a week. To contact Product Support, in the Customer Portal, open a case.

End User Topics

Overview Functionality

About the Overview functionality

The Overview functionality provides a summary view of the main characteristics of your dataset. Each tab in the Overview pane displays detailed information about the currently selected dataset.

Overview toolbar

The following table describes the actions you can perform using the Overview toolbar buttons.

Toolbar Icon	Toolbar Element	Description
	Download	**Report (HTML)**. A zip file that contains all available models, replays, and charts and an index file to navigate to these models, replays, and charts. **Filtered dataset (CSV)**. If any filters are active, the system downloads the filtered dataset. Defined metrics are included in the download. **Dataset import template**. The import configuration. You can apply this template when you import information from a dataset. Refer to Dataset import template for more information. **Mining template**. The mining configuration. You can apply this template when you mine a process model. Refer to Mining template for more information.
	Copy from	Copies results from another process into an open process, including mined models, replays, charts, dashboards, filters, and metrics. **Note** **Copy from** only works if the system can map the set of attributes or metrics from the source process to the process to which the system is copying the results. Use this feature to perform the following tasks. • Upload a new dataset using results obtained in a previous dataset. You can perform this action if a dataset contains extra or different data, but has the same or similar structure, for example, from the same data source but from a different time period. You can copy all the results from a previous dataset into the new process and automatically re-compute all models, flows, and charts for the new dataset. • Automatically update copied charts and objects with data from the new process. All charts and objects that you copy into a new process using the Copy from feature update automatically with the data from the new process. The only exceptions to this are models that use the Thorough miner option.

Toolbar Icon	Toolbar Element	Description
	Mine	Opens the Mine main pane and the Settings pane. Use the Settings pane to define elements for the dataset. You can also use the Filter pane to affect the results of the mined model.
	Replay	Opens the Replay pane and the Select a process model to inspect pane. After you select a model, use the Settings pane to set the replay options. You can also use the Filter pane to affect the results of the replay.
	Chart	Opens the Chart pane and X-Axis, Data series, and Chart pane. Use the X-Axis, Data series, and Chart pane to define elements you want included in the resulting chart.

Dataset element definitions

The following table describes information and the tabs that are available through the Overview pane.

Tab	Element	Description
Summary	Access	**Restricted access** is an evaluation mode that shows a percentage of cases in a dataset. **Full access** shows all cases in a dataset.
	Number of activities	Shows the number of activities that occur in your dataset.
	Number of cases	Provides a count of the total number of cases in your dataset.
	Number of events	Specifies where a document passes through a workflow processes.
	Timestamp	Documents when a step in a case is complete. The **First timestamp** shows the time the activity began. The **Last timestamp** shows when the activity ended.
Attributes/Metrics	Metrics	Provides a list of metrics and their values. You can sort data in ascending or descending order and you can show or hide columns.
Detailed case information	Case events	Shows the attributes values associated with any case.
Actions	----------	Allows you to add, edit and delete user-defined actions. Refer to User-defined actions for more information.
Description	----------	Allows you to enter a description about your dataset.

View dataset elements

Complete the following steps to view and interpret information in your dataset including attributes, metrics, case information, and dataset descriptions.

1. View the information contained in the **Summary** tab.

   Access. The **Restricted access** option is an evaluation mode in which you can see only a fraction of cases in a dataset. This mode is only applicable for a standalone user. The **Full access** option grants you complete access to all cases in a dataset.

   - **Number of activities**. This feature shows the number of actual activities that occur in the imported dataset.

   - **Number of cases**. This feature provides the total number of cases contained in the dataset.

   - **Number of events**. This number specifies where the document passes through in the workflow process.

   - **Timestamp**. This feature documents when a step in a case is complete. In the summary, you can see the first and last timestamp for all case events. The **First timestamp** shows the time the activity began. The **Last timestamp** shows when the activity ended.

2. To view attributes associated with your dataset, select the **Attributes/Metrics** tab.

   - To sort the attributes and metrics, click the column you want to sort and select an option.

3. To add, edit, or delete a metric, click a table entry and select an option from the toolbar. The **Metric** toolbar is enabled only for those metrics that you can modify.

4. To view the value of the attributes of any case, select the **Detailed case information** tab.

   1. To view the events associated with a case, select a case. By default, only the case identifiers, activity, and timestamp for the events appear selected.
   2. To choose the attributes that display in this list, click the **Select attributes** button. In the **Select attributes to show** dialog box, select the **Case attributes** and **Event attributes** you want to include in your dataset.
   3. To include all cases or event attributes, check the **Case Attributes** or **Event attributes** option.
   4. Click **OK**.

5. Select the **Description** tab and click **Edit description**.
   1. Enter information about the dataset.
   2. Click **Save description**.

6. Select the **Actions** tab and add user-defined actions. Refer to Create an action for more information.

Actions

About actions

An action opens a pre-defined URL in a web browser. You can configure an action on a case or an event. In the URL you can use the values of the attributes of the event and/or the case to which the action is applied. You can use an action, for example, to open a case in another application.

Case actions are executed both from a case in the detailed case view and from a replay. Event actions are executed from an event in the detailed case view.

Create an action

Complete the following steps to create an action. Refer to Execute an action for more information.

Note You can add multiple actions.

1. In the **Actions** pane, click **Overview**.
2. In the **Overview** pane, click the **Actions** tab.
3. Click ➕ to create a new action.
4. In the **Name** field, enter a name.
5. In the **URL** field enter a URL.
6. Optional. Click **Insert Attribute** and select an attribute from the dataset to add to the URL.
7. **Note** The inserted attributes are replaced with the data from the case or event when you execute an action. The attributes you select determine if an action is a case action or an event action. If you do not insert an attribute, the action is a case action. If you insert one ore more event attributes, the action is an event action.

Execute an action

You can execute an action from a case or from an event. There are three options to execute an action from a case.

- From a detailed case overview.
- From a filtered cases dialog box.
- From a replay.

You can execute an action from an event from a detailed case overview only.

Execute an action from a case

Complete the following steps to execute an action from a case.

From a detailed case overview or a filtered cases dialog box

1. Click a case.
2. In the **Events for case** dialog box, click the button with the action name.

Note Event actions are unavailable.

From a replay

1. In the replay, click a ball that represents a single case.
2. In the **Case** dialog box, click the button with the action name.

Execute an action from an event

Complete the following steps to execute an action from an event.

From a detailed case overview

1. Click a case.
2. In the **Events for case** dialog box, select an event.
3. Click the button with the action name.

Note Case actions are also available.

Manage processes

About processes

In Perceptive Process Mining, the term 'process' is used to describe the collection of the dataset and all analysis results derived from this dataset, such as process models and replays.

Note A process can contain only one dataset.

Create a new process

If your Perceptive Process Mining environment does not contain a process, you must create one.

1. Click the **Create a new process** ➕ button.
2. In the **Add process** dialog box, in the **Name** field, enter a process name that defines the procedure or data you want to mine.
3. In the **Folders** list, select the location where you want to store the new process. Refer to Organize processes for information on how to add folders.
4. Click **OK** and view the newly created process in the repository.

Note When you perform a dataset import, the dataset is imported into the active process.

Manage existing processes

This table lists the actions available for managing a process.

Button	Name	Action
	Switch process	Switch processes. Click the **Switch** button and chose an option from the list of processes in your account. **Note** The active process displays in the top of the left pane.
➕	Create a new process	Create a new process and add it to your list.
✏	Rename the current project	Open the **Rename/move process** dialog box and rename or move an existing process.
	Update dataset from database	Update a dataset from an existing database.
	Apply and/or manage mining templates	Apply a mining template.

Organize processes

To organize processes, complete the following steps.

1. Click the **Switch** 🐞 button and click **Organize** 📁 from the list.

2. In the **Organize processes** dialog box, select a folder from the **Folders** list.

3. Use the buttons to **Add** ➕ , **Rename/move** ✏️ , and **Delete** ❌ selected process or processes. For additional information on security privileges, refer to Set access rights to a process. Click the **Delete objects from process** 📇 button to select and delete items which are part of the process.

4. Click **OK**.

Set access rights to a process or folder

When you organize your processes and folders, you can assign access rights that let you determine the file system permissions for a process or folder. You define the rights for specific users and groups.

1. Click the **Switch** 🐞 button and select **Organize** 📁 from the list.

2. In the **Organize Processes** dialog box, select a folder or process from the appropriate list.

3. Click the **Security** ✔️ button to edit the access rights to the selected folder.

4. In the **Access right** dialog box, click **Add**.

5. In the **Select user or group to assign** dialog box, select the **Type** and **Name** of the users or groups to which you want to grant access.

6. Click **Select**.

7. In the **Access Rights** dialog box, assign the authorization rights using the following options.

   - **Override effective right**. Override an existing authorization on the selected process.

   - **Unspecified**. The rights of the group to which the user belongs are assigned or the access rights are inherited from the parent folder of the current process or folder.

   - **No access**. Restrict access to the process.

   - **Read-only access**. Allow a user to view a process.

   - **Full access**. Allow a user to view and mine a process.

8. Click **Save Rights** and close the dialog box. Click **OK**.

Import information from datasets

About importing

You can import dataset information into Perceptive Process Mining from different sources, such as files in comma-separated format (CSV) or from a database. A dataset that you import into ImageNow should contain data for each executed activity, together with the case ID to which the activity belongs, the activity name, and an activity timestamp.

What is a dataset?

In Perceptive Process Mining, a dataset is a collection of event data that is exported from or contained in an enterprise system and that is the basis for creating and analyzing a process model. This collection is

either a file in a format that is supported by Perceptive Process Mining or it can be queried from one or more of the tables in a relational database.

About importing

You can import dataset information into Perceptive Process Mining from different sources, such as files in comma-separated format (CSV) or from a database. A dataset that you import into ImageNow should contain data for each executed activity, together with the case ID to which the activity belongs, the activity name, and an activity timestamp.

About data sources

If a process does not contain any data, you must import a dataset to that process. You can select a source from which to import the dataset. You can import a dataset from the following formats.

- CSV file
- Database
- Perceptive file

These import options are available from the left pane, under Actions.

About importing data from a CSV file

You can import a dataset from a CSV file. If you want to import a dataset from a CSV file, use one of the following options.

- Directly import the CSV file. Refer to Import a CSV file directly.
- Use an XML import template. Refer to Import a CSV file using an XML import template.

Note You can import the data in a ZIP file to reduce the amount of time required to import the file.

Import a CSV file directly

To import a dataset from a CSV file, complete the following steps.

1. In the **Actions** pane, select **CSV import**.
2. Click **Browse** to locate your data file.
3. Click **Next**.
4. Optional. Adjust the CSV format options. The dataset is previewed based on the options that you set. Refer to CSV format options in Dataset import options.
5. Click **Next**.
6. Define how Perceptive Process Mining should interpret the fields (or columns) in the CSV file. Examine the settings carefully. An error in the configuration jeopardizes the analysis of your data. For more information, refer to the Data field definitions in Dataset import options.

   Note In the previous step of the import wizard, use the preview option to verify that this field is available.
7. Click **Next**.
8. Optional. Add columns that are available in the CSV file but do not have a standard mapping to data fields. Deselect the **Import?** check box if you want to skip a column during import. For more information about column attributes, refer to the Non-standard data field in Dataset import options.

9. Click **Next**.

10. Click **Finish**. A summary of the imported dataset displays. After the import finishes, your dataset is available for mining.

Note If there are any errors in the import process, a report displays. Refer to Evaluate a dataset import report.

Import a CSV file using an XML import template

You can use an XML import settings file that contains CSV format settings and data field mappings. This file contains all information that you otherwise configure using the CSV import wizard.

Complete the following steps to import a dataset from a CSV file using an XML import template.

1. In the **Actions** pane, select **CSV import**.

2. Click **Browse** to locate your data file.

3. Expand the **Advanced options** field.

4. Click **Browse** and select the dataset import template file.

5. Click **Next** to import the CSV file. The **Result** window displays.

Note If there are any errors in the import process, a report displays. Refer to Evaluate a dataset import report.

About importing data from a database

You can import a dataset from a database. You can import the contents of a single table or use an SQL statement to query the appropriate data. Importing information from a dataset instead of a CSV file includes the following differences.

- Data is read from the database. This eliminates the need to design a CSV export in the business application.

- There is no limit on the size of the data; when importing a CSV or Perceptive file, web browsers have an upload limit of 2 GB. Interpreted as

- You can update the data automatically. You can set an update interval in Perceptive Process Mining.

During the initial data import one can select the type of updates for the process:

- **Replacing update:** Existing data will be discarded during the update and replaced by the newly read dataset.

- **Incremental update:** Data read from the database is interpreted as changes which are applied to the existing data. For more information, refer to Incremental Dataset Updates

Once selected, the update type of a process cannot be changed and subsequent updates will be of the selected type.

If you want to import a dataset from a database, use one of the following options.

- Connect directly to the database. Refer to Import a dataset using a direct connection.

- Use a dataset import template. Refer to Import a dataset using a direct connection.

For more information about the supported databases, refer to Perceptive Process Mining Technical Specifications.

Import a dataset using a direct connection

To import a dataset from a database using a direct connection, complete the following steps.

1. In the **Actions** pane, select **Database import**.

2. Select the **Do not use a data import template** option.

3. Click **Next**.

4. Enter the database connection data.

5. To ensure that you entered the connection parameters correctly, click **Test connection**.

6. Click **Next**.

7. In the **Data Source pane**, select the data source. You can select a table or enter a custom query. The results display in the **Data preview** pane.

8. Click **Next**.

9. Define how Perceptive Process Mining should interpret the fields (or columns) in the database. Examine the settings carefully. An error in the configuration jeopardizes the analysis of your data. For more information, refer to the Data field definitions in Dataset import options.

10. Click **Next**.

11. Optional. You can add columns that are available in the database but do not have a standard mapping to data fields. Select the **Import?** checkbox to import the column. For more information about column attributes, refer to the Non-standard data field in Dataset import options.

12. Click **Next**.

Note If there are any errors in the import process, a report displays. Refer to Evaluate a dataset import report.

Import a dataset using a data import template

To import a dataset from a database using a data import template, complete the following steps.

1. In the **Actions** pane, select **Database import**.

2. Select the **Use a pre-defined template** option.

3. Select the appropriate template from the list and click **Next** or, if there is no template available or you want to create another template, click the **Add button**.

4. Browse to the data import template file and click **Add**. The template is added to the list.

5. Verify the database connection setting and click **Next**.

6. In the **Data Source** pane, select the data source. You can select a table or enter a custom query. The results display in the **Data preview** pane.

Note If there are any errors in the import process, a report displays. Refer to Evaluate a dataset import report.

About updating a dataset from a database

You can update the dataset from the database both manually and automatically. This allows you to mine your business processes continuously. In case of automatic updates, you can set the update interval on a weekly or monthly basis. Refer to Manually update a dataset and Automatically update a dataset for more information.

Manually update a dataset

To update the dataset from the database manually, complete the following steps.

1. Click the **Update from database** 📑 button in the left pane.

2. To run a query before the update executes, enter the query on the **Preparation query** tab.

3. From the **Update schedule** tab, click the **Update now** button.

4. In the **Update history** tab, click the **Refresh** button to view the progress of the update.

5. To verify the database connection settings, click the **Connection settings** tab.

Automatically update a dataset

To set the automatic update from the database, complete the following steps.

1. Click the **Update from database** 📑 button in the left pane.

   Note To run a query before the update executes, enter the query on the **Preparation query** tab.

2. Select **Weekly** or **Monthly** for the update frequency.

   - **Weekly**. Enter the hours and minutes (HH:MM) for the days the update must execute. You can specify multiple update moments per day, separated by a comma.

   - **Monthly**. Enter the day (DD) and the hour (HH:MM) on which the update must execute.

3. Optional. To receive notification of import errors, enter your email address.

4. Click **Save**.

5. To view the update history, click the **Update history** tab.

6. To verify the database connection settings, click the **Connection settings** tab.

Import data from Perceptive

You can also import event logs that are created by other Perceptive products, such as Perceptive Process Enterprise or Perceptive Content. This data is exported in files with the extension PRI. There is no configuration necessary in Perceptive Process Mining as the mapping of the data fields is predefined.

To import a dataset from a Perceptive file, complete the following steps.

1. In the **Actions** pane, select **Perceptive import**.

2. Click **Next**.

3. Click **Browse** and select **Perceptive import file** (*.PRI)

4. To import the file, click **Next**. The **Result** window displays. If any errors occurred, an error report displays in this window.

Create a dataset import template

To create a dataset import template, complete the following steps. Refer to Dataset import template for more information.

1. In the **Actions** pane, click **Overview**.

2. In the **Overview** toolbar, click **Download** ⬇ .

3. Select **Dataset import template**. The template is downloaded to your file system.

Incremental Dataset Updates

Incremental dataset updates are meant to provide efficient refresh of the data for situations where only a relatively small part of the data is changed. This is done by only interpreting the data read from the datasource as change operations applied to the already existing dataset.

Supported Update Operations

Data read from the update data source is interpreted as an ordered sequence of update operations. The currently supported operations include:

- `Event insert`: Adds an event (with its attributes) to a case. If the case already existed, the event is added at the appropriate location based on its timestamp. If the case did not exist, a new case is created. The case attributes of the event override any existing case attributes.

- `Case update`: Updates the case attributes of an existing case. If the case does not exist, the update has no effect. Event attributes are not changed by this operation.

- `Case delete`: Delete a specified case with all its events If the case does not exist, the deletion has no effect.

Every event of must specify the case it belongs to, its completion timestamp and the name of its activity. Due to their nature, update operations have different requirements:

	Case Name	Activity	Timestamp	Operation type
`'Normal event'`	required	required	required	<not applicable>
`Event insert`	required	required	required	<optional>
`Case update`	required	<ignored>	<ignored>	<optional>
`Event insert`	required	<ignored>	<ignored>	<optional>

Importance of Ordering for Update Operations

IMPORTANT: **The update operations are executed in the order they are received from the data source.** Applying the changes in different order may produce different end results:

- New events are inserted just before the first event with a timestamp that is strictly greater than the timestamp of the new event. In case no such event exists, the new event is inserted at the end of the case. As a result, new events with equal timestamps are inserted in the order they are received.

- Any update operations for a given case which are followed by a case delete operation (for the same case) are effectively discarded because the whole case will be deleted by the delete operation. Any updates after the last delete operation are kept.

- The values of a case attribute for a given case is determined by last update operation for that case. Note that because the update operations are executed in the order received, the last change is not necessarily the the event with the last timestamp.

  Note that if the value of a case attribute in the last update operation is empty, the case attribute will have empty value. This applies always, even in situations where the value was non-empty before the update or there were preceding update operations with non-empty value for that case attribute. **This is a deviation from the policy of using the first non-empty value for the case attributes** which applies to non-incremental (replacing) updates.

Preparing an Incremental Update for Import

The process of data preparation for incremental updates is largely the same as for replacing updates with the following differences:

Specifying the Update Operation Type

During import, a new (optional) special column can be specified. If specified, the value in this column defines the type of the update operation. The column must be a text column and the currently supported values and their mapping to update operations are:

Column value	Interpretted as
NULL	Event insert
''	Event insert
'EVENT_INSERT'	Event insert
'EI'	Event insert
'CASE_UPDATE'	Case update
'CU'	Case update
'CASE_DELETE'	Case delete
'CD'	Case delete

<any other value>	Ignore the row, report as error

It should be noted that the usage of the column is optional. If no update operation is specified, then it is assumed that all operations are `Event insert`.

Ordering the Changes

As noted above, the changes are applied to the dataset in the order they are received. It is therefore very strongly recommended when importing incremental changes to use a `SELECT` SQL query with an explicit `ORDER BY` clause.

If all imported update operations are `Event insert` and there are no activities with the same timestamp within a case, then it the import order does not influence the end result and the changes may imported directly from a table.

Limitations

- Changing the Case Name of a case is not possible

- Updating and deleting of individual existing events is not supported. A workaround is to start by deleting the whole case and import the new remaining events again after that.

- Currently only datasets imported from a database can be updated.

Process Model Mining

What is process mining?

Mining discovers a process model that describes the behavior of the selected cases in your dataset. The miner supports the discovery of process models that contain sequences, parallelism, choices, and loops.

Mine toolbar options

The following table lists the functionality for all models in the Mine toolbar.

Toolbar Icon	Toolbar Element	Description
	Rename	Renames the process model.
	Delete	Removes the process model from the currently selected process.
	Download	Saves the model as an HTML5 file, a Perceptive Process file (PAL), a Microsoft Visio file (VXD), or an Adobe flash file (SWF).
	Side by side	Visually compares the process model with another process model by showing them side-by-side.
	Print	Prints the process model. **Note** This button is not available in Flash mode.
	Replay	Creates a replay of the currently shown model.
	Edit	Opens a saved model. You can then update the model options from the Options pane. **Note** This action does not work with imported models.

Mining settings

You can manipulate the options you use to mine a process through the features available in the Settings pane. The following table describes the mine settings.

Mine Setting	Description
Slider	Use the slider bar to determine the percentage of cases that are included in the mining process. **Note** If the Miner is set to **Fast** (see description below), you do not need to click **Mine** to update the model. Perceptive Process Mining automatically updates the model.
Attribute	Select a string-values event-level attribute containing the activity names for the mined model. Activities are shown as rectangles in the model. Examples of attributes linked to events could include the names of the executed activities (or tasks) or the name of the person (or system or role) that has performed a given task. Since your data set may have different attributes linked to the events in your case, the Miner functionality allows you to mine different models that show how these attributes relate.
Layout	Define the layout used to display the mined model. • **Process Model** arranges nodes and arcs from top to bottom based on their order of occurrence in the selected cases. This layout helps identify global flows underlying the process executions. • **Social Network** positions nodes and arcs in a circular fashion based on their linkage (input/output arcs) to other nodes. This layout is useful for detecting groups of attributes that typically work or occur together in the selected cases in your dataset.

Mine Setting	Description
Compare	Compare the model to an existing model to explore similarities and differences.
Performance	Use these settings to enrich the analysis information that is shown in the elements (rectangles and arrows) of mined models. Refer to Define performance metrics and performance comparisons.
Miner	Select **Fast** or **Thorough** based on the information you want to view. Thorough mines parallelism of tasks, but Fast does not support this feature.
Description	Provide a description of the mined model and the options that define it.

Mining methods and elements

The mining methods available for extracting information are:

- **Fast**. The results of the mining process promptly display as this option does not mine parallel execution of tasks.

- **Thorough**. This process may take longer to display the mining results since it includes parallel data. The miner works iteratively and continuously to find better process models that describe the cases in the dataset. While mining, Process Mining continues to update the process model. The mining process continues until you click Stop Miner or you select one of the other functionalities.

The following table provides information about the elements that display in a mined model.

Element	Description
Rectangles	The rectangles represent attributes, usually activities. The attribute name displays in the rectangles.
Start and End Icons	These elements represent start and end activities. • In HTML 5 mode, the start icon ⍓ represents a start activity, and the end icon ⍓ represents an end activity. • In Flash mode, two green squares represent a start activity, and two red squares represent an end activity.
Arcs and Arrows	These elements indicate the order of execution of the activities they connect.
Status Circles	Statuses are intermediate places between activities with AND split or join semantics in some models mined by the thorough miner. They always have XOR split or join semantics.

Mine a process model

Before you start mining a dataset, you select a number of settings to influence the result. For example, you can select the percentage of cases included in the mined model to simplify the resulting model. The resulting mined process model consists of rectangles and arrows that interconnect them. Refer to Mining methods and elements for more information.

To create a mined process model, complete the following steps.

1. In the **Actions** pane click **Mine**, or on the **Overview** toolbar click the **Mine** button.

2. Drag the slider to set the target percentage.
   The target percentage indicates to the mining algorithm which percentage of cases to consider during the discovery of the process model. For example, if you set this parameter to 40%, the mining process focuses on finding the simplest model that represents 40 percent of the cases.

3. To start the mining process, release the mouse button. The model displays in the **Mine** window.

Changes to the mined model display

In the Mine pane, you can change the mined model display and save the edited model.

- In HTML5 mode, you can pan the model and zoom in and out using the mouse. Also, to change the model layout and enhance the readability of a model, you can edit the path of individual arrows in the model and you can move individual activities and labels. If you move activities, the arrows between them remain connected.

- In Flash mode, you can pan the model and zoom in and out using the mouse.

For instructions, refer to the following topics.

- Pan a model

- Select multiple elements of a model

- Zoom in and out of a model

- Edit an arrow for a model

- Move elements in a model

- Save and open a model

Pan a model

To pan a model in the mined model display, complete the following steps.

1. Click a blank area, other than an activity, and drag the model.

2. Release the mouse when the model is in the preferred position.

This applies both to HTML5 mode and Flash mode. Refer to Changes to the mined model display for related actions.

Zoom in and out of a model

To zoom in and out of a model in the mined model display, complete the following step.

- Use the mouse wheel button to increase or decrease the current size of the model.

This applies both to HTML5 mode and Flash mode. Refer to Changes to the mined model display for related actions.

Select multiple elements of a model

To select multiple activities, arrows, or arrow labels of a model, complete the following steps.

1. Extend a selection by selecting a group of elements one-by-one or by rectangle selection.

- To perform one-by-one selection, hold down CTRL and click one element after the other.

- To perform rectangle selection, hold down CTRL, click a blank area, other than an activity, and drag the elements.
Release the mouse when the shown rectangle comprises your selection.An element part of the rectangle selection that was already selected is deselected after the rectangle selection completes.

Note Instead of using the CTRL key, click the mouse until the shape of the pointer switches to an arrow.
This procedure allows you to perform the action on a touch device.

2. To deselect an element, hold down CTRL and click a selected element.

Edit an arrow for a model

When you click an arrow in HTML5 mode:

- The color of the arrow changes to indicate you selected the arrow.

- A context-sensitive toolbar displays at the position where you clicked the arrow.

- The points of the arrow display in a contrasting color. You can drag these points to change the curve and path of the arrow.

In HTML5 mode, to edit an arrow, complete the following steps.

1. To change the path of an arrow, click the arrow and check if it contains enough points you can drag to achieve the desired result.

- To insert an additional point, click the arrow at the position where the new point should be and on the context toolbar click the **Add point** button or simply drag the temporary point that appears when you click the arrow.

- To delete an extra point, click the point, and on the context toolbar, click the **Remove point** button.

- To move a point on the arrow, drag it to the desired location.

2. To change the appearance of an arrow, click the arrow, and on the context toolbar, click one of the following buttons.

- **Straighten** . Convert the arrow to a polyline. This action changes the arrow into a sequence of straight line segments.

- **Soften** . Convert the polyline arrow to a spline. This action smooth's the curve of the arrow.

- **Reset** . Convert the arrow to a straight arrow between two activities. This action removes any points that were added to change the path of the arrow.

This applies to HTML5 mode only. Refer to Changes to the mined model display for related actions.

Move elements in a model

In HTML5 mode, to move activities or arrow labels in a mined model display, complete the following steps.

1. Drag the element to the preferred location.
   To move a selection of multiple elements, hold down the CTRL key and drag the selection to the preferred location.

   Note Instead of using the CTRL key, click the element until the shape of the pointer switches to an arrow.
   This procedure allows you to perform the action on a touch device.

2. To save the changes to the location of elements, click the **Save** button or the **Save as** button.

   Note If you do not save the changes and then mine the model again, the location of the activities resets to the default location.

This applies to HTML5 mode only. Refer to Changes to the mined model display for related actions.

Global toolbar

In the upper left of the **Mine** pane, you can view additional information and apply filters on the elements contained in your current selection or change the appearance of the selected arrows.

- The **Arrows** section, which shows the number of the selected arrows, contains buttons for the appropriate actions to apply on this selection.

- The **Activities** section, which shows the number of the selected activities, contains buttons for the appropriate actions to apply on this selection.

View additional mined model information

For each activity and arrow in a mined model, you can view a dialog box containing additional information about the activity or arrow. You can also apply filters to drill down on an activity or arrow. For activities, an added filter only includes cases in which this activity occurs at least once. For multiple activities, an OR filter is applied. For arrows, an added filter only includes cases in which the selected arrow is followed. For multiple arrows, no filters are added.

To view a dialog box containing information about an activity or an arrow, complete the following steps.

1. Click the activity or the arrow. A context-sensitive toolbar displays above the activity or at the point where you clicked the arrow.

2. On the context toolbar for the activity or arrow, click the ⓘ button.

To add a sequence filter related to an arrow, complete the following steps.

1. Click the arrow.

2. On the context toolbar of the arrow, click the 🜋 button.
   The sequence filter is added to the **Filtering** pane.

To add a filter related to an activity, complete the following steps.

1. Click the activity.

2. On the context toolbar of the activity, click the 🜋 button.
   The filter is added to the **Filtering** pane.

To add a filter related to a set of activities contained in a selection of multiple elements, complete the following steps.

1. Select multiple elements of a model.

2. In the upper left of the **Mine** pane, on the **Activities** section of the global toolbar, click the 🔽 button.
   The filter is added to the **Filtering** pane.

Define performance metrics

You can define performance metrics to obtain performance data during mining. For example:

- The average, minimum, or maximum number of days it takes to complete an activity.

- The number of users who perform an activity.

- The average, minimum, or maximum throughput time of a case.

You can configure two performance metrics for activities, and two performance metrics for arrows. However, you can configure the performance metrics whenever you like and save the resulting minded models. In this way, you can obtain many combinations of performance data. When you define the performance metrics, you also define how the performance data display in your mined model. For activities, the performance data display as a right-aligned text label or as a colored bar inside the activity rectangle, or both. For arrows, the performance data display as a right-aligned text label or as a percentage next to the arrow, or both. Also the width of the arrows can reflect the value of one of the two arrow metrics - the higher the value, the thicker the arrow.

A further step, once you have obtained performance data, is to compare performance data between your mined model and a set of baseline values. For instructions, refer to Define performance comparisons.

To define the performance metrics for mining a process, complete the following steps.

1. On the **Mine** toolbar, click **Edit**. Complete the following steps as needed.

2. In the **Settings** pane, click the arrow 🔽 next to **Performance** to expand the pane.

3. Select **Show performance metrics**.

4. To configure up to two performance metrics for activities, complete the following substeps for each activity metric.

   1. Under **Per activity**, in the left-hand field select one of the following values.

      - **Count**. Counts the number of times that the system executes the activity.

      - **Count unique**. Counts the number of unique values of the attribute that you select in the field to the right.

      - **Average/Sum/Minimum/Maximum**. Computes the average, sum, minimum, or maximum of the attribute you select in the field to the right.

      - **Do not use**. No performance metric.

   2. If in the left field you selected **Count unique**, **Average**, **Sum**, **Minimum**, or **Maximum**, select a value in the right-hand field.

5. To configure up to two performance metrics for arrows, complete the following substeps for each arrow metric.

    1. Under **Per arrow**, in the left-hand field select a value. The list contains the same values as the **Per activity** metrics.

    2. If in the left field you selected **Count unique**, **Average**, **Sum**, **Minimum**, or **Maximum**, in the right-hand field select one of the following values.

        • **Throughput time**. Shows the time between the start of a case and the end of the case.

        • **Wait time**. Shows the waiting time between finishing one activity and starting the next one. This option is only available if the dataset contains activity start times.

        • **Wait + Proc. time**. Shows the amount of time between finishing one activity and finishing the next one. This is the sum of the waiting time and the processing time.

6. To determine the display of the width of arrows, in the **Arrow width** field select one of the following options.

    • **Always the same**. All arrows have the same width. Performance values do not influence the appearance of arrows.

    • **Use first metric**. The value of the first performance metric for arrows determines the width of the arrow.

    • **Use second metric**. The value of the second performance metric for arrows determines the width of the arrow.

7. To determine how the performance metrics display in the mined model, for each activity metric and each arrow metric complete the following substeps.

    1. Next to the metric, click the arrow ⌄ to expand the pane.

    2. Select the following settings as needed.

        • **Show label**. Displays the value of the metric in the activity rectangle or next to the arrow.

        • **Show bar**. Displays a horizontal bar that reflects the impact of the metric in each activity rectangle. This setting applies to activity metrics only.

        • **As percentage**. Displays the value of the metric as a percentage next to the arrow. This setting applies to arrow metrics only.

Define performance comparisons

If you configured performance metrics to obtain performance data for the activities and arrows in your mined model, you can go one step further and compare those performance data against baseline values. For example, if you compare performance data between two models, you gain insight into the changes in the performance of the process over time.

When you configure a performance comparison, you set the baseline: the performance data of another previously minded and saved model. Also, you define what comparison data you want to display in your mined model: the baseline values, or the difference between the mined values and the baseline values. For activities, the comparison data display as a left-aligned text label inside the activity rectangle. For arrows, the comparison data display as a left-aligned text label next to the arrow. In addition, all comparison data are preceded by a small icon that indicates an increase, a decrease, no change, or the absence of one of the values to compare.

For additional information, refer to Define performance metrics.

To define the settings for a performance comparison of the mined model, complete the following steps.

1. On the **Mine** toolbar, click **Edit**.
2. In the **Settings** pane, click the arrow ⯆ next to **Performance** to expand the pane.
3. Select **Show performance metrics**.
4. In the **Baseline** field, select **Other model**.
5. In the **Baseline model** field, select the model that is the baseline for the comparison of performance data between the two models.

   Note The baseline model must be a model in the same process.
6. If you have not yet configured performance metrics for activities and arrows, do so now. Refer to Define performance metrics for instructions.
7. To determine how performance comparisons display in the mined model, for each activity metric under **Per activity** and each arrow metric under **Per arrow** complete the following substeps.

   1. Next to the two fields that define the metric, click the arrow ⯆ to expand the pane.
   2. In the **Baseline Presentation** field, select one of the following values.

      - **Percentage**. The difference between the mined value and the baseline value displays as a percentage of the baseline value.
      - **Abs. value**. The baseline value displays as an absolute value.
      - **Abs. change**. The difference between the mined value and the baseline value displays as an absolute value.

Save and open a model

You can save a mined model to your process, and you can open a saved model.

To save a model to a process, complete the following steps.

1. Click **Save** or **Save as** in the repository menu option.
   Note If you click **Save** for an existing model, the model is overwritten.
2. In the **Save** dialog box, enter a name for the model and click **OK**.

To open a saved model, complete the following steps.

1. In the **Objects** pane, click **Model**.
2. In the list, select a saved model.

Download a model

You can download a model as an HTML5 file or an Adobe Flash file. You can also download a Microsoft Excel file that contains statistical information about the paths in the discovered model.

To download a model, complete the following steps.

1. In the **Objects** pane, click **Model**.
2. On the **Model** toolbar, click **Download**.
3. Select the download format.

Note To open a model downloaded as an HTML5 file with Microsoft Internet Explorer, you must use Internet Explorer version 9 or higher.

Download and apply a mining template

A mining template is a file that contains all mining settings that you configured. You can download the settings for all objects mined and saved in a specific process. This includes the settings for models, replays, and charts.

To download mining settings, complete the following steps.

1. On the **Overview** toolbar, click the **Download** button.

2. Select **Mining template**.

At a later date, you can automatically mine objects with the same settings in a different process with different data by importing and applying the template.

To apply a mining template, complete the following steps.

1. Click the **Apply and/or manage mining templates** button.

2. Select the appropriate process from the list.

3. Click the **Apply this template now** button.

4. Select the items to copy and click **Next**.

5. Map data attributes and metrics and click **Finish**.

Replay

About replay

Replay generation provides a visual representation of the dynamics of your processes. The information is based on dataset information in your process. This functionality replays a selected mined or imported model and shows the actual times when events occur in your dataset.

The balls that move through your mined model represent cases. The flow of balls through the model provides a graphical representation of the paths of the cases as they move through the process. You can use this graphical representation to assess the distribution of the case throughput time over the activities.

For example, if your dataset contains starting and ending times for the activities, then the wait times are represented by the flow of balls in the arrows in your model. The replay shows the processing times by the amount of time a ball spends within an activity (or rectangle) in your model (2).

However, if your dataset only contains ending times of activities, then the time a ball takes to flow from the top of an incoming arrow to the end of an activity (the bottom of the rectangle) represents the sum of the wait time (1) plus the processing time for that activity (3).
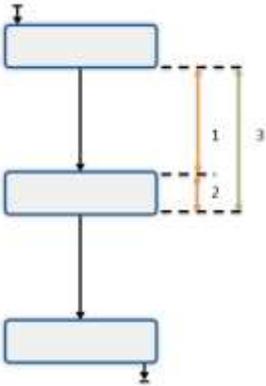
Replay toolbar options

The following table lists the functionality in the Replay toolbar.

Toolbar Element	Toolbar Icon	Description
Rename		Renames the replay.
Delete		Removes the replay from the currently selected process.
Download		Saves the replay as an HTML5 file, or an Adobe flash file (SWF).
Side by side		Visually compares the replay with another replay by showing them side-by-side.
Edit		Opens a saved replay. You can then update the replay options from the Options pane.

Replay a process model

Complete the following steps to create a replay.

1. In the **Actions** pane, click **Replay** and select a model from the **Object** pane, or select a process model from the **Object** pane and then click **Replay** in the model window toolbar.

2. In the **Parameters** pane, click **Generate replay**. The process model displays in the **Replay** pane. The duration of the replay displays in the **Duration** field of the **Parameters** pane.

3. Optional. In the **Replay** pane, click the question mark for an overview of the events occurring in the process model.

4. Optional. In the **Replay** pane, click **Download** and select an output format to download the edited replay.

The flow of balls through a model provides a graphical representation of waiting times and processing times of the activities in the dataset. You can stop or resume the replay using the Play and Stop buttons, but you can also drag the slider to a point in time.

Tips

- You can display more information about the cases in the replay by clicking on a ball.

- You can execute an action from a case in the replay by clicking on a ball. Refer to Actions for more information.

If you position your mouse cursor in the replay pane, you can:

- Use the scroll wheel to zoom in and out. Note that the current position of the mouse cursor is the focus of the zoom.

- Press the left mouse key and move the model replay in the **Replay** pane.

- In Flash mode, right-click in the **Replay** pane to show a context menu with generic Flash settings.

Change replay settings

The default setting for the replay of a model is a 30-second movie where all balls have the same color and there are no animated charts on the right side of the replay. However, you can create longer (or shorter) replays and configure charts and arrows to concisely show the flow of cases through the model.

The following table describes the base replay settings.

Field	Description
Duration	Sets the length in seconds for the movie. If you increase the length of the movie, the replay slows down but the total duration of the replay process remains the same. You can increase the length if the balls move too quickly through the model so you can more accurately examine the model.
Chart	Displays an animated chart to the right of the animated model. This chart is based on the attribute you select. For instance, if you select Activity, the activities in the model are represented by a color. The chart lists these activities and shows the color of each activity. The color of a ball changes when it goes through different activities. **Note** When you select an event-level attribute for the chart option, then the colors of the balls change during the replay. The throughput time and frequency charts do not display. Instead, only a legend with the colors for each value displays.
Start all at once	All cases start at once. This allows you to compare the different throughput times of cases. The timeline in this case does not reflect the calendar time, but the time since the beginning of the cases.

Advanced replay settings

You can configure advanced settings for an animated model.

- Click **Advanced** to expand the advanced settings window.

The following table describes the advanced settings.

Field	Description
Model attribute	Indicates to Perceptive Process Mining which attribute the rectangles in the model represent. This setting is only required for imported models that are not based on the Activity attribute. If this setting is incorrect, then no balls appear, because Perceptive Process Mining cannot match the names of the activities in the process model to the values of the given attribute.
Variable arrow width	In Flash mode, the width of the arrows in the model depends on the amount of cases that recently passed over the arrow. In HTML5 mode, this option has no effect.

Provide a description for a replay

You can enter a description for a replay.

1. Click **Description** to expand the description field.

2. Click **Edit** and enter a description. You can use the text formatting options in the description toolbar.

3. Click **OK** to save the description.

Save and open a replay

You can save a replay to your process, and you can open a saved model.

To save a replay to a process, complete the following steps.

1. In the **Objects** pane, click **Replay list**.

2. In the list, select a saved replay.

3. Click **Save** or **Save as** in the repository menu option. **Note** If you click **Save** for an existing replay, the replay is overwritten.

4. In the **Save** dialog box, enter a name for the replay and click **OK**.

To open a saved replay, complete the following steps.

1. In the **Objects** pane, click **Replay list**.

2. In the list, select a saved replay.

Download a replay

To download a replay as an HTML5 file or an Adobe Flash file, complete the following steps.

1. In the **Objects** pane, click **Replay list**.

2. On the **Replay** toolbar, click **Download**.

3. Select the download format.

Charting

About charting

Charting allows you to create charts based on the information in your dataset. You can create charts that display your data in a format that is easy to share with others. Perceptive Process Mining supports pie, line, bar, area, and stacked area charts.

Chart toolbar options

After you create your chart, you can use the buttons at the top of the charting area to save and download the chart.

The following table describes the chart toolbar options.

Toolbar Element	Toolbar Icon	Description
Save/Save as	🖫 / 🖬	Save the chart in the repository.
Download as an image	🌐	Download an image of the chart in PNG format.
Downoad a Microsoft Excel file	▦	Download the chart image and the chart data in a Microsoft Excel spreadsheet.

Create a chart

Use the chart options to produce a graphical representation of your dataset. After you create a chart, you can move your mouse over the chart data to view information through a tooltip.

1. In the **Actions** pane, click **Chart**.

2. Select a chart type from the available list of chart type tabs.

3. In the **Settings** pane, select an **Attribute** from the list.

4. Click **Update**.

Save and view charts

The Objects pane lists the available charts. To view a list of saved charts, in the Objects pane, click Charts. To open an existing chart, click the chart name in the repository list.

Complete the following steps to save a chart in the repository.

1. Click the **Save** or **Save as** button.

2. In the **Save** dialog box, enter a name for the chart and click **OK**.

Note Clicking the Save button overwrites the current chart.

Define X, Y axis

When you create a chart, there are several areas that you need to configure.

- **X-axis settings**. Define the data that displays for the X axis. Refer to Configure the X-axis for more information.

- **Data Series**. Define the data that displays for the Y axis.

  Note You can use multiple data series per chart. Refer to Configure the data series for more information.

- **Chart Settings**. Define the chart elements, such as chart title and color scheme. Refer to Define chart settings for more information.

Configure the X-axis

You select the attribute to display on the X-axis of your chart. By default, your selection places each value of the data attribute on the X-axis. For example, choosing Activity shows each activity in the dataset.

Click the arrow ⌄ next to each attribute selection box to expand the X-axis settings and configure the following elements.

- **Label**. Enter the label that is shown under the X-axis in the chart. If you leave this box empty, the name of the selected attribute appears.

- **Sorting**. By default, the values on the X-axis sort alphabetically (or numerically) in increasing order. Use the Chart sort options to change the sort order.

- **Range**. By default, all possible values of the chosen X-axis attributes appear. Use the Chart range options to limit the number of items shown on the X-axis

- **Rounding**. You can handle numerical attribute values as text. You can round off duration and date/time attribute values using the following options: minute, hours, days, weeks, and months.

- **Split on attribute**. You can subdivide your data series into multiple series based on a data attribute. This feature allows you to automatically create a data series for each value of a given attribute. This action effectively adds another dimension to the X-axis. For example, if you have a chart with Activity on the X-axis and split on the User attribute, the system creates a separate data series for every User/Activity combination present in the dataset.

Configure the data series

A data series is a value that is shown on the Y-axis for each value on the X-axis. The basic setting for each data series is the function, or aggregator, for that data series, which defines the value that is computed for a given X-axis value.

Complete the following steps to define the data series.

1. In the **Data Series** pane, click the ⌄ arrow to display the entire pane.

2. Select an aggregator function for the data series value. The available options are:

   - **Count**. The data series shows the number of times each X-axis attribute value occurs in the dataset.

   - **Average/Minimum/Maximum/Sum**. These options compute the average, minimum, maximum, or sum of the selected attribute. These options are only valid for numeric attributes.

   - **Count unique**. This option counts the number of unique values (per X-value) of the attribute selected in the attribute list. For example, if the X-axis attribute is **Activity**, you select **Count Unique** of the **User** attribute, and then the chart shows the number of users that were involved in each of the activities.

3. Select a metric that corresponds to the frequency selection. Click 🔍 to view the available metrics.

4. In the **Label** field, enter a label for the chart legend. By default the function and attribute name show.

5. Click the **KPI** arrow to expand the options. You can define the key performance indicator (KPI) targets for the data series.

   Note When you define a KPI target, extra lines appear in the chart to clearly indicate the target. Choose from the following types of KPIs.

   - **No KPI**. Do not show any KPI targets in the chart. This is the default setting.

- **Constant**. Define a KPI that is a constant value. Enter a label for the KPI and then enter the target value. This value is a single number. For example, a fixed target of 100 days for throughput time could be defined as a constant KPI with the 100d 0:00:00 for a data series based on throughput times.

- **Percentage from series**. The KPI target is computed as a percentage of another data series. Enter the percentage as a value between 0 and 100, and configure the aggregation function and attribute of the data series from which the percentage is taken.

6. Optional. Add a data series. Click the ⊞ icon in the **Data Series** header pane to add another data series. Configure the new data series as described above.

   Note Click the Delete button ✖ next to a data series to remove the data series from the list.

Define chart settings

Additional settings for defining a chart are grouped under the Chart Settings heading. To define chart elements, complete the following steps.

1. In the **Chart title** field, enter a title for your chart. The title displays above the chart and is the name given to the chart when saved in the repository.

2. Click the ⏷ arrow to display additional chart options.

3. In the **Width** field, enter the width of the chart in pixels. After saving the chart, the default size is set to 800 x 600 pixels.

4. Set the **Color Scheme** for the chart using the slices, bars, lines, and areas for the data series.

5. The following options are subsets of the **Color Scheme** option.

   - **Reverse colors**. Click **Reverse colors** to reverse the chosen color scheme. For example, if the Red/Green color scheme is selected, then the first data series appears in red and the second one appears in green. If the colors are reversed, the color order reverses.

   - **Show labels**. Show or hide the text labels next to the X and Y axes or for the pie chart slices.

   - **Show legend**. Show or hide the legend of the data series under the chart.

   - **Show tooltips**. Show or hide the tooltips when hovering over a slice, line, bare, or area.

   - **Pie chart per series**. This option only affects pie charts with more than one series. A separate pie chart shows for each data series. When not checked, a pie chart shows for each value of the X-axis attribute in which each data series shows as a slice in the chart.

   - **Chart conversion**. You can convert the data series values to percentages. Refer to Chart conversion percentages for more information.

6. Optional. In the **Description** field, enter a description for your chart.

Chart sort options

The following table describes the sort options.

Element	Description	Remarks
Default	The values on the X-axis sort alphabetically or numerically in increasing order, depending on the data type of the selected attribute.	
Count	The values on the X-axis are sorted by their frequency.	For example, if Case type is the X-axis attribute, then the case types are sorted based on the number of cases per type.
Unique Values	This default setting shows the values on the X-axis that are sorted alphabetically or numerically, depending on the data type of the selected attribute.	The **of attribute** field is not relevant and is unavailable.
Average/Minimum/Maximum/Sum	When you select one of these options, you can select another numerical data attribute in the of attribute field.	
Sort ascending	Select this check box to sort items on the X-axis in ascending order.	Clear the check box to sort in descending order.

Chart range options

The Range settings allow you to limit the values that display on the X-axis in several ways.

The following table describes the range options.

Element	Description	Remarks
All values	This default setting does not limit the range of X-axis values.	
Leftmost N / Rightmost N	Use this setting to specify the number of items that should display on the X-axis.	Enter a number in the Number / % field. Using Leftmost N shows the first N items, the Rightmost N shows the last N items.
Leftmost X (5) / Rightmost X (%)	This setting is similar to Leftmost N and Rightmost N, except that the number you specify in the Number / % is interpreted as a percentage between 0 and 100.	Perceptive Process Mining computes the total number of items on the X-axis, and then takes the specified left or right percentage of that number.

The selections you make using the Range setting occur after the values on the X-axis are sorted according to the Sorting settings. For example, if you create a chart that uses the case type attribute on the X-axis, sorted ascending on average throughput time, then using a range of Leftmost 10 shows the 10 case types with the lowest throughput time. Selecting Rightmost 10 shows the 10 case types with the highest throughput time.

Chart conversion percentages

The Chart conversion option converts the data series values to percentages. There are two options, percentage per x value and percentage within series.

% per X value

This converts the data series values of multiple X-axis attributes to percentages for each X value.

Example

In a chart, the X-axis attribute is User. There are two users, User A and User B. There are two datasets. The % per X value option is selected to calculate the percentages.

The following table describes the example values.

X-axis attribute	Data series 1 value		Data series 2 value	
	Numeric	Percentage	Numeric	Percentage
User A	2	33%	4	66%
User B	4	40%	6	60%

% within series

This converts the data series values of an X-axis attribute to percentages within the series.

Example

In a chart, the X-axis attribute is User. There are two users, User A and User B. There are two datasets. The % within series option is selected to calculate the percentages.

The following table describes the example values.

X-axis attribute	Data series 1 value		Data series 2 value	
	Numeric	Percentage	Numeric	Percentage
User A	2	30%	4	40%
User B	4	40%	6	60%

Filters

About filters

Filtering allows you to modify your search criteria by manipulating filter settings. Filtering options allow you to include or exclude specific records from the mining process so you can focus on specific aspects of a business process. Perceptive Process Mining offers a set of predefined filters for a number of aspects.

Predefined filter types that are available for use include:

- Attribute filter
- Unique paths filter
- Incomplete cases
- Sequence filter
- Separation of Duties violations

Filter toolbar options

The Filtering pane toolbar has a number of functions to organize your filters.

The following table describes the functions in the toolbar.

Icon	Description
Switch	Switch alternates between saving filters for the current process or disabling filters.
✚	Adds the filter items of the selected filter to the current filter.
✖	Deletes the current filter. **Note** This action cannot be undone.
✏	Renames the current filter.
🖫	Saves the current filter. The current filter is overwritten without confirmation.
🖫	Saves the current filter. You can enter a new filter name.

Create a filter

Filters consist of filter items. You can add one or more filter items to a filter. Filter items are applied to the dataset in the order they are configured in the filter. You can drag the filter item pane to alter the order.

To create a filter, complete the following steps.

1. To open the **Filtering** pane, click ⏪ .
2. Click the **Add filter item** 🎝 button and select an option from the list. By default the attribute filters are presented. You can also select the **Other filters** option.
3. In the **Selection** list, check the values on which you want to filter.
4. Click the **Selection** drop-down and choose one of the following options.
   - **All**. Clears all options in the list.
   - **None**. De-selects all options in the list.
   - **Invert**. Reverses the selected and unselected options.

     You can also enter characters in the search box to find the appropriate values.
5. To sort the values, click ⬇ and choose one of the following options.
   - **Sort on count**. Sorts based on numerical value, from high to low.
   - **Sort on selection**. The values you have selected are moved to the top of the list.
   - **Sort alphabetically**. Sorts the values alphabetically.

6. To refresh the sort values pane, click 🌀. When a filter item that is higher in the list order is changed, click this button to reflect these changes in the current filter item values list.

7. To change the filter options, click ⚙ . The options determine the selections that are made from events or cases. The options that are available depend on the filter attribute.

8. To delete the current filter item, click ✖ .

9. To collapse the filter item pane, click 🔺 . Note that the filter item remains active. To expand the filter item pane, click 🔻 .

10. To save the filter, click the **Save** 💾 or the **Save as** 📑 button.

11. To view a list of records in your selected criteria, select **Show filtered cases**.

12. In the **Filtered cases** pane, click a record to view details about events for that record. Click **OK** to close the **Events for case** pane.

13. To close the **Filtered cases** pane, click **OK**.

14. Based on the filter type you select, continue through the process of defining the attribute on which you want to filter.

15. To view the updated process based on the newly selected attributes, click **Mine**.

About attribute filters

An attribute filter filters cases or events based on their attribute text or numerical values. You can select any available attribute or metric. By default, the attribute text values are presented as selectable filter items, together with the number of matching cases in column **Cs.** and the number of matching events in column **Evt.**

Alternatively, you can use the following wildcards to select the attribute values.

- (asterisk): 0 or more characters match.

- ? (question mark): 1 character matches.

Numerical values, such as date or time are presented as ranges. The *from* and *to* fields are pre-filled with the minimum and maximum values by default.

Refer to Relative date ranges for a description of the relative date ranges.

Refer to Attribute filter options for a description of the filter options.

About sequence filters

A sequence filter filters cases or events based on the occurrence of two subsequent events in a case. You can either choose that these events are directly subsequent or that there can be other events in between the start and the end event.

Refer to Sequence filter options for a description of the filter options.

About unique paths filters

It is very likely that more than one case in the dataset has similar numbers and order of activities or actors. Perceptive Process Mining extracts and calculates these similar models, which are called unique paths. A unique paths filter filters cases, which follow the most frequent path based on the percentage you set. You can compare this filter to the percentage slider in Mining.

Refer to Unique paths filter options for a description of the filter options.

About incomplete case filters

An incomplete case filter filters cases that start and end with selected activities. You can use this filter to find cases that do not have the appropriate end activity. You can select one or more start activities and one or more end activities.

Refer to Incomplete case filter options for a description of the filter options.

About separations of duties violations

The separations of duties violations lets you check whether the executors of two (sets of) activities are different. You can check whether these violations occur within a case or globally, across cases.

Refer to Separations of duties violations options for a description of the filter options.

Refine filtered cases

After you select the filters on which to mine a process, you can refine your search parameters and extract a distilled model based on additional information.

1. In the **Filtering** pane, select **Show filtered cases**.

2. In the **Filtered cases** dialog box, click the **Select attributes** option.

3. In the **Select attributes to show** dialog box, select the attributes you want to display in your mined model. Clear the attributes you do not want to display.

   - **Case attribute**s. Select the **Case attributes** check box to select all case attributes,

   - **Event attributes**. Select the **Events attributes** check box to select all event attributes.

4. Click **OK** and then click **OK** in the **Filtered cases** dialog box.

5. To download the dataset, click the **Download** option and select a filtered dataset option.

View events associated with cases

When you filter on a mined model, you can view events associated with each case. To view the events, complete the following steps.

1. In the **Filtering** pane, select **Show filtered cases**.

2. In the **Filtered cases** dialog box, select attributes to determine the events you want to view.

3. In the **Filtered cases** dialog box, click **Case ID**.

The resulting dialog box shows case attributes and event attributes associated with that case.

Metrics

About metrics

Metrics are attributes that are calculated from case or event attributes, also called base attributes, or from other metrics. Base attributes are attributes that are present in the dataset. Metrics provide analytical information in the form of numeric values or text for cases or events. You can use metrics globally in Perceptive Process Mining. Metrics are calculated for the situation to which they are applied, so filtering can influence the value of a metric. The metrics that are available, depend on the attributes that are present in the dataset.

By default, there are two metrics available after import of the dataset:

- Throughput time and processing time, if event start times are available.

- Throughput time and time to completion, if event start times are not available.

Note If a calculated attribute is present in a dataset, for instance throughput time, that attribute is imported even if this metric is available by default. The result is that after import, two Throughput time metrics are present.

Metric types

A number of metric types are available. Refer to the following topics for more information and examples.

- Throughput time metric

- Advanced throughput time metric

- Processing time metric

- Idle time metric

- Time to completion metric

- Time period metric

- Occurrences of value metric

- Unique values metric

- Event attribute as case attribute metric

- Case attribute as event attribute metric

- Unique path percentage metric

- Unique path number metric

- Change text values metric

- Unroll loops metric

- Date/time metrics

Metric data types

Metrics can have different data types. The following table describes the available data types.

Data type	Description
Date/time	The date and time in all formats and with all separators.
Duration	The duration in yyyy mm dd hh:mm:ss
Number (integer)	An integer number, for instance for counting a number of cases.
Number (floating point)	A number with decimals, for instance an amount.
Text	A text string that can contain all characters including numbers.

Create a metric

You can set up a new metric to display analytical information shown in your mined model elements.

To create a new metric, complete the following steps.

1. In the **Overview** pane, click the **Attributes/Metrics** tab.
2. Click the ➕ button.
3. Select the metric type and click **Next**.
4. Follow the wizard steps.
5. Click **OK**. The metric displays in the **Metrics** list.

Edit a metric

You cannot edit base metrics, but you can edit all other existing metrics. Refer to What is a metric? for more information.

To edit a metric, complete the following steps.

1. In the **Overview** pane, click the **Attributes/Metrics** tab.
2. In the **Metrics** list, select the metric.
3. Click the **Edit Metric** button.
4. Follow the wizard steps.
5. Click **OK**.

Delete a metric

You cannot delete a base metric, but you can delete all other metrics.

To delete a metric, complete the following steps.

1. In the **Overview** pane, click the **Attributes/Metrics** tab.
2. In the **Metrics** list, select the metric.
3. Click the ✖ button.

Types of metrics

Throughput time metric

The following table describes the characteristics of the Throughput time metric.

Type	Description	Remark
Case	Time between the start of a case and the end of the case.	Events do not have to be continuous. Sometimes an event does not have a start time, but an event always has an end time. If the events do not have a start time, the duration of the first event is not included in the calculation
		Note This time includes the idle time, which is the time between the end of an event and the start of another event.

Example

Calculate the throughput time of a case. There are no activity start times available in the dataset.

The green arrow in the image below is a graphical representation of the throughput time of a case.
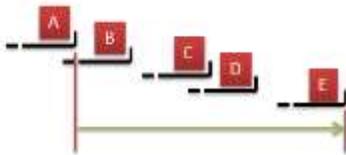
Advanced throughput time metric

The following table describes the characteristics of the Advanced throughput time metric.

Type	Description	Remark
Case	Time between a configured start attribute and a configured end attribute.	As start time, you can choose between a first and a last occurrence of an activity or multiple activities. If you choose multiple activities, by default the first executed activity is selected as start time. As end time, you choose between a first and a last occurrence of an activity or multiple activities. If you choose multiple activities, by default the first executed activity is selected as end time.

Example

Calculate the throughput time for different occurrences of events B and D.

1. The first occurrence of B and the last occurrence of D.
2. The first occurrence of B and the first occurrence of D.
3. The last occurrence of B and the last occurrence of D.

The image below is a graphical representation of the three situations mentioned above.
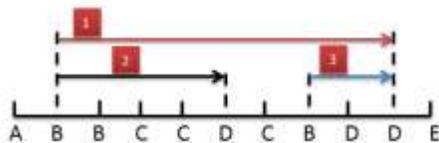
Idle time metric

The following table describes the characteristics of the Idle time metric.

Type	Description	Remark
Case	The total time between the end time and the start time of events in which there is no activity.	The sum of all periods of non-activity. **Note** You can only uses this metric if event start and end times are available.

Example

Calculate the idle time for a case.

The image below is a graphical representation of the idle time of a case. The idle time is the sum of idle time x and idle time y.
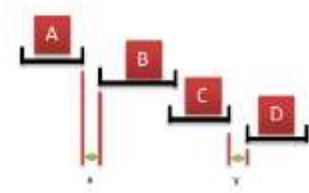
Time to completion metric

The following table describes the characteristics of the Time to completion metric.

Type	Description	Remark
Event	The time that is needed to complete two successive activities.	This metric is used if there is one activity that has no known start time. The assumption is that an activity starts if the preceding activity ends.

Example

Calculate the time to completion of the successive activities in a case. There are no activity start times available in the dataset.

The green arrows in the image below are a graphical representation of the times to completion between two successive activities in a case.
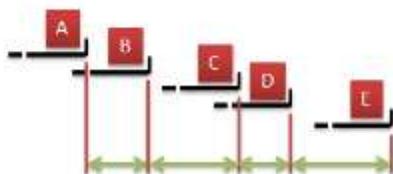
Processing time metric

The following table describes the characteristics of the Processing time metric.

Type	Description	Remark

Type	Description	Remark
Event	The time between start time and end time of events, by event.	You can only use this metric if the start and end times of events are known. For each event, a value is calculated.

Example

Calculate the processing time for each of the events A, B, and C.

The green arrows in the image below are a graphical representation of the processing time per event.
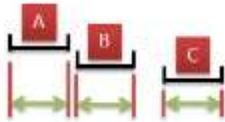
Time period metric

The following table describes the characteristics of the Time period metric.

Type	Description	Remark
Event	The time between two date/time attributes of each activity.	You can use this metric to calculate, for example, the difference between the planned delivery time of a product and the actual delivery time. **Note** Only available if the activities have a start and an end time.

Occurrences of value metric

The following table describes the characteristics of the Occurrences of value metric.

Type	Description	Remark
Case	Calculates how many times a value of an attribute is present in a case (not unique).	If you select all values, the result of this metric is the number of events.

Example

Calculate the number of times a particular person executes activities in a case.

A case has seven activities with executors. Determine how many times Peter and Charles are active as executors. The following table describes the activities and the executors.

Activity	1	2	3	4	5	6	7
Executor	Peter	Tim	Peter	Bill	John	John	Charles

The occurrence of Peter as Executor: 2. The occurrence of Charles as Executor: 1. So the occurrence of the selected values is 3.

Unique values metric

The following table describes the characteristics of the Unique values metric.

Type	Description	Remark

Type	Description	Remark
Case	Calculates how many times a certain attribute is present in a case (unique).	The attribute value can also be a text string.

Example

Calculate the number of persons that execute activities in a case.

A case has seven activities with executors. Determine how many unique executors there are in this case. The following table describes the activities and the executors.

Activity	1	2	3	4	5	6	7
Executor	Peter	Tim	Peter	Bill	John	John	Charles

The number of unique executors in this case is five, as Peter and John execute two activities each.

Event attribute as case attribute metric

The following table describes the characteristics of the Event attribute as case attribute metric.

Type	Description	Remark
Case	Aggregates an event attribute to a case attribute.	For instance, the start time of a case is the minimum value of the Timestamp attribute.

Examples

- The start date of a case is the minimum value of the Timestamp attribute.
- The end date of a case is the maximum value of the Timestamp attribute.
- The start activity of a case is the first value of the Activity attribute that is not empty.
- The end activity of a case is the last value of the Activity attribute that is not empty.

Case attribute as event attribute metric

The following table describes the characteristics of the Case attribute as event attribute metric.

Type	Description	Remark
Event	A case attribute is copied to an event.	

Example

A date on case level can be used in an event.

Unique path percentage metric

The following table describes the characteristics of the Unique path percentage attribute metric.

Type	Description	Remark
Case	The percentile of a case in the sort order of unique paths.	Frequently occurring paths have a low percentile; paths that rarely occur have a high percentile (from 0 to 100).

Example

Mine a model with percentages between 20 and 60. That is not possible with the slider in the mining pane: percentages always start at 0. To resolve this problem, complete the following steps.

1. Create a **Unique path percentage metric** with the **Activity** attribute.
2. Add this metric as a filter item.
3. In the **from** field type **20** and in the **to** field type **60**.
4. Click **Show filtered cases**.
5. Click **Mine** and leave the slider at 100%.

Unique path number metric

The following table describes the characteristics of the Unique path number attribute metric.

Type	Description	Remark
Case	The index of a case in the sort order of unique paths.	Frequently occurring paths have a low number; paths that rarely occur have a high number (from 1 to number of unique paths).

Example

Examine one particular unique path. Complete the following steps to examine one unique path with the cases that follow that path.

1. Create a **Unique path percentage metric** with the **Activity** attribute.
2. Add this metric as a filter item.
3. In the fields, type the path number(s).
4. Click **Show filtered cases**.

Change text values metric

The following table describes the characteristics of the Change text values metric.

Type	Description	Remark
Case/Event	Change the value of a text attribute.	You can change the value of a text attribute to another value.

Example

To simplify a process, you can map two activities to one value by renaming two different activity names to one name.

Unroll loops metric

The following table describes the characteristics of the Unroll loops metric.

Type	Description	Remark
Case	Number of times that an activity is executed.	If activities are executed more than once in a process, it influences the mining results. This metric calculates the number of times an activity is executed.

Date/time metrics

The following table describes the characteristics of the Date/time metrics.

Type	Description		
Event	Extracts different attributes from a date or time attribute.	**Attribute name**	**Possible values**

Type	Description		
		Year	yyyy, yy
		Quarter	[1-4]
		Month	mm
		Day	[1-31]
		Hour	[0-23]
		Minute	[0-59]
		Second	[0-59]
		Week of the year	[1-53]
		Week of the month	[1-6]
		Day of the year	[1-366]
		Day of the week	[1-7], [Monday-Sunday] **Note** Monday is day 1.

User Management and Access Rights

About User Management and Access Rights

User access rights to processes and mined data in Perceptive Process Mining is based on the following factors.

- Creating users, assigning these users to groups, and the default rights of these groups.

- Creating folders that contain processes.

- Assigning access rights to folders and processes for users and groups.

- The rights that a group has propagate to its members, unless you explicitly override these rights. Similarly, rights that a user or a group has in a folder propagate its subfolders and to the processes that the folder contains.

Consequently, you must assign a group or a user to a folder or process to give a user or users in that particular group access to folder or process information.

Process objects include models, replays, charts, filters, and dashboards.

Groups

About groups

A group has certain default access rights for folders, processes, and process objects. These rights are used by default unless they are explicitly overridden when you assign a group to a folder or a process. A group enables you to classify all users that, in principle, share the same access rights. Refer to Default user groups for more information.

Create a group

You can create a new group. Automatically, a new group is always a sub group of the Anyone group until it becomes a member of another group.

To create a group, complete the following steps.

1. Click **Administration** .
2. Click the **Groups** tab.
3. Click **Add** and enter the group name.

Set default access rights for a group

To set the default access rights for the group, complete the following steps.

1. Under **Group Default Rights**, select the appropriate access rights for folders and processes.
2. Under **Group Default Rights**, select the appropriate access rights for process objects.
3. Click **Save Rights**.

Users

About users

A user is part of one or more groups. By default, the access rights of a user are inherited from the group to which the user belongs. However, you can set the specific rights of a user to differ from the group to which the user belongs. Refer to Access rights types for more information.

Create a user

To create a user, complete the following steps.

Note User names are not case-sensitive.

1. Click **Administration** .
2. Click the **Users** tab.
3. Click **Add**.
4. Enter a user name and email address.

    Note An email address is optional, but recommended if you want the user to be able to retrieve his or her password.

5. Clear **Enable User Account** if you do not want to activate the account.
6. Select **User Administrator** if you want to allow the user to create and configure users.
7. Click **Save**.
8. Document the password that displays in the pop-up window.

Add a user to a group

To add a user to a single group or to multiple groups, complete the following steps.

1. Click **Add Group**.
2. Select the group or groups. To select multiple groups, hold down CTRL and select multiple entries.
3. Click **Select**.

   Note When you add a user to multiple groups, be aware of the implications this has for the access rights.

Set up user management rights

To set up user management rights, you must complete the following tasks.

1. Configure existing groups or create new groups. Refer to Create a group for more information.
2. Create users. Refer to Create a user for more information.
3. Add users to the groups. Refer to Add a user to a group for more information.
4. Optional. You can change the default user or group access rights.

Set up user and group access rights

To give groups or users access rights to folders, processes, and process objects, complete the following steps.

1. Add a group or an individual user to a folder, subfolder, or process.
2. Optional. You can override the effective rights that are inherited from parent groups or folders.

Set default access rights for a user

To set the default access rights for the user, complete the following steps.

1. Click **Default Access Rights**.
2. Select the appropriate access rights for folders and processes.
3. Select the appropriate access rights for process objects.
4. Click **Save Rights**.

About access rights to processes, folders, and process objects

When you organize your processes, folders, and process objects, you allow groups and specific users to have access to the information by assigning rights. The rights a user has on a process, folder, or process object depends on how the user is connected to the folder, process, or process object.

Note Perceptive Process Mining always applies the highest available access right. When, for example, a user is specified to have read only access to a certain process, but he is also a member of a group that is allowed full access to all processes, then the full access right is applied.

Set access rights to a process or folder

The set the access rights to a process or folder, complete the following steps.

1. In the left pane, click **Switch** and then select **Organize** from the list.

2. In the **Organize Processes** dialog box, select a folder or process from the appropriate list.

3. Click the **Security** button to edit the access rights to the selected folder.

4. In the **Access right** dialog box, click **Add**.

5. In the **Select user or group to assign** dialog box, select the **Type** and **Name** of the users or groups to which you want to grant access.

6. Click **Select**.

7. In the **Access Rights** dialog box, assign the authorization rights using the following options.

   - **Override effective right**. Overrides an existing authorization on the selected process.

   - **Unspecified**. The rights of the group to which the user belongs are assigned or the access rights are inherited from the parent folder of the current process or folder.

   - **No access**. Restrict access to the process.

   - **Read-only access**. Allow a user to view a process.

   - **Full access**. Allow a user to view and mine a process.

8. Click **Save Rights** and close the dialog box.

9. Click **OK**.

Reference

Display mode

For the rendering of process models, replays and charts, you can select between Adobe Flash and HTML5 rendering. You can do this at runtime.

Note You can only switch to HTML 5 rendering if your browser supports HTML 5.

Complete the following steps to switch between Adobe Flash and HTML 5 rendering.

1. Click your user name in the top right corner.

2. In the menu, select the **Use HTML 5 features** check box. When you now, for instance, open a model, the model is rendered in HTML 5. This setting is stored.

Note Internet Explorer 6, 7 and 8 do not fully support HTML 5. You can use the Google Chrome Frame plug-in to enable HTML 5 in these browsers.

Web service information

You can show information about the Perceptive Process Mining web service. This information you need, for instance, if you use Perceptive Process Mining content and functionality through REST.

Complete the following steps to show the web service information.

1. In the toolbar, click **Administration**.

2. In the **Administration** pane, click the **Web services** tab. Now the following items display:

   - **Customer ID** The ID of the current customer.

     Note In local installations of Perceptive Process Mining this ID is always '0' (zero).

   - **Web service base URL** The base URL of the web service, for the current customer.

     Note The last part of the URL reflects the customer ID, for instance:

     ```
     http://127.0.0.1/v1.0.0/0/
     ```

     In this case, the last '0' is the customer ID.

Dataset import options

CSV format options

The following table describes the CSV format options.

Option	Description		
Encoding	The type of encoding used by the CSV file to be imported. Perceptive Process Mining detects the encoding type based on the contents of the file. **Note** Examine the preview to check the current settings. Verify that accented characters (for instance ä, e, u, á, â, ã) display correctly.		
Separator	Character used in the CSV file to separate the fields. Perceptive Process Mining detects the delimiter based on the contents of the file.		
Quotes	Specifies if quotation marks are used to indicate field values and if so, which type of quotation marks are used. Perceptive Process Mining does not detect this setting; the default setting is double quotation marks. **Note** If characters that are also used as separators (for instance commas or semi-colons) exist in text that is between quotation marks, these characters are not regarded as separators.		
	Double quotes	Double quotation marks are used to indicate field values. This is the default setting, as it is most commonly used and it is the default in Microsoft Excel.	
		in CSV	in dataset
		"Person A"	Person A
		"Person 'A'"	Person 'A'
		"Person ""A"""	Person "A"
	Single quotes	Single quotation marks are used to indicate field values. Two consecutive single quotation marks inside field values are replaced by a single quotation. This allows separator characters and line breaks to be used inside field values.	
		in CSV	in dataset

Option	Description		
		'Person B'	Person B
		'Person "B"'	Person 'B'
		'Person "B"'	Person "B"
	No quotes	All quotation marks remain untouched in the imported dataset.	
		in CSV	in dataset
		"Person C"	"Person C"
		'Person C'	'Person C'
First row contains column names	If the first row contains the column names and this option is selected, the names of the imported data attributes are taken from this row. If you deselect this option, the letters A, B, C, and so on are used as column names. If the first row of the dataset does not contain column header names, the letters A, B, and so on are also used.		

Data field definitions

When you import a dataset from a CSV file, you can map the columns (or data fields) of your dataset to the data fields used by Perceptive Process Mining. In the Special Columns pane, a list of standard data field names displays. The imported dataset contains its own unique column names contained in the CSV file, for example, Case Name, Activity, Activity start time, and Activity end time. The names from the CSV file are mapped to Perceptive Process Mining names. If the mapping is incorrect, you can select the appropriate data field.

- **Date/time data fields**. You can adjust the date format if it is not accurately detected.

  Note Date and time separators are detected automatically.

- **Activity start timestamp**. This is not detected automatically. If this column is present in the CSV file, you can add it to the dataset by selecting the appropriate data field.

The following table describes the data field definitions.

Data field	Description	Compulsory
Case ID column	Determines the column that contains the identifier of the case to which an activity belongs.	Yes
Activity column	Determines the column that contains the activity name.	Yes
Timestamp column	Determines the column that contains the time at which an activity is completed.	Yes
Activity start timestamp	Determines the column that contains the time at which an activity is started. Activity start timestamp is not detected automatically.	No

Non-standard data fields

The following table describes the non-standard data fields.

Column	Description
Attribute Name	By default, this is the name of the column header in a file. You can rename an attribute. The changed name is used in the imported dataset.

Column		Description
Level	Case	Identifies the columns that correspond to case data fields. A case data attribute is a data attribute which has a single value throughout the whole case, for example the purchase order number when each purchase order is a case; this value does not change with each activity that is executed for a single purchase order.
	Event	Indicates the columns that correspond to activity data fields. An event data attribute is a data attribute that can be different for every event (activity) which was executed in a case. For example, the name of the person who executed an activity in the purchase order process could be an event data attribute, because multiple people can perform activities for the same purchase order. **Note** The choice between case data and event data during import has consequences for how the attribute is used exactly by Perceptive Process Mining. If you do not know whether an attribute is case data or event data, it is always safe to import an attribute as event data. At a later date, you can always add a metric that creates a case data attribute from the event data attribute.
Data type	Text	The field contains a text string.
	Date/time	The field contains a date. The format options are: Year, month, day Month, day, year Day, month, year
	Duration	The field contains a time period. The format options are: HH:MM:SS (hours, minutes, seconds) HH:MM (hours, minutes) Hours (number) Minutes (number) Seconds (number)
	Number (floating point)	The field contains a number with decimals. The format options are: Decimal separator is a point Decimal separator is a comma
	Number (integral)	The field contains an integral number.
Format		Select the correct format for the field; see Data type descriptions above.
Sample values		This shows the first ten values of the fields in your CSV file to evaluate the settings for this step in the import process. These sample values are also shown in the preview in the previous step.

Evaluate a dataset import report

After you import a dataset, Perceptive Process Mining displays a report. This report contains information about:

- The number of lines in your dataset that are successfully imported.

- The number of errors that were encountered in the import.

- The number of warnings raised in the import.

- In the case of a CSV file import, the precise location of the errors or warnings of the first 50 errors or warnings. Perceptive Process Mining indicates the severity of the problem, the line number in your dataset where this problem occurred, the column to which each problem applies, a description of the problem, and the value that could not be read correctly.

- In the case of a database import, the number of the errors or warnings of the first 50 errors or warnings. Perceptive Process Mining indicates the type of problem (error or warning), a description of the problem and the number of times the problem occurred.

After you evaluate the import report, you can correct the errors. For more information, refer to Correct CSV import errors or warnings

Note If there are no errors or warnings, the list does not display.

Correct CSV import errors or warnings

You have several options to correct errors and warnings.

- Correct the field data types. Errors or warnings often result from incorrect settings in the step where you define the meaning of the fields in the dataset. For example, if you configure a data field as a number but the field contains text strings, then all the values of this field type are flagged as warnings.

- Proceed with importing this dataset. Sometimes the problem is present in the dataset and is not a result of the configuration in the previous step of the wizard. In this case, it is important to understand how Perceptive Process Mining treats the problems or errors. Warnings are handled in a different way than errors. In short, the complete row (or line) of your dataset is discarded if an error is found in any of the fields in that line. However, when a warning is encountered, only the incorrect data field is discarded, the other data fields in that line of your CSV file are imported.

- Cancel the import process and prepare a new dataset to resolve the problems. For more information, refer to Import data from a CSV file file.

Dataset import template

A dataset import template is a file that contains all settings that you configured during the import of a CSV file or during the configuration of a database connection. You can download this file as a template if you want to import a CSV file or connect to a database with a similar layout at a later date.

Attribute filter options

The following table describes the available attribute filter options.

Option	Remark
Keep events that match	Only for text values
Discard events that match	Only for text values
Keep cases in which at least one event matches	Only for text values
Discard cases in which at least one event matches	
Filter item is enabled	
Filter item is disabled	
Discard cases that match	Only for numerical values
Also match when the value is empty	Only for numerical values

Attribute filter example

A process contains three activities: Start, Work and Finish. You want to find the cases in which the activity, Work, is not present.

The following table shows the example dataset.

Case ID	Timestamp	Activity
case-01	1/1/2013	Start
case-01	3/30/2013	Work
case-01	6/10/2013	Finish
case-02	2/28/2014	Start
case-02	3/15/2014	Work
case-02	4/1/2014	Work
case-02	6/18/2014	Finish
case-03	3/14/2014	Start
case-03	8/16/2014	Finish

1. Add an **Activity filter item**.
2. Select only the **Work** activity from the list.
3. Click the ⚙ button and select **Discard cases in which at least one event matches**.
4. To see which cases do not have the **Work** activity, click **Show filtered cases**.
5. To show the events for this case, double-click the case ID. As it shows in the example dataset table, the case with the case ID "case-03" has no Work activity.
6. Optional. You can use a wildcard to select the activity. Select the **Wildcard** filter option in the **Attribute** filter wizard page and enter the pattern *ork or ?ork.
7. Click **Show filtered cases**. The result is the same as in the activity value example above.

Relative date ranges

Relative date ranges are useful when you periodically update the dataset or perform an update from a database.

The reference date ('Today') is the day the dataset was imported or, in case of a database import, the day of the last successful database update. A day starts at 0:00:00 am and ends at 11:59:59 pm.

Example

You import a dataset on May 15, 2014 on 11:00 pm. In this case, Today is May 15, 2014.

The following table describes the available relative date ranges.

Note For the examples, the reference date is May 15, 2014.

Date Range	Description	Example
Today	The reference date	May 15, 2014
Yesterday	The day preceding the reference date.	May 14, 2014
This week	The week that contains the reference date (first day of the week is Monday).	May 12, 2014 – May 18, 2014
This month	The month that contains the reference date.	May 1, 2014 - May 31, 2014
This quarter	The quarter that contains the reference date.	April 1, 2014 – June 30, 2014
This year	The year that contains the reference date.	January 1, 2014 – December 31, 2014
Past week	The 7-day period in which the reference date is the last day.	May 9, 2014 - May 15, 2014
Past month	The month in which the reference date is the last day.	April 16, 2014 - May 15, 2014
Past quarter	The 3-month period in which the reference date is the last day.	March 16, 2014 - May 15, 2014
Past year	The 12-month period in which the reference date is the last day.	June 16, 2013 - May 15, 2014
Previous week	The week preceding the week that contains the reference date.	May 5, 2014 - May 11, 2014
Previous month	The month preceding the month that contains the reference date.	April 1, 2014 – April 30, 2014
Previous quarter	The quarter preceding the quarter that contains the reference date.	January 1, 2014 – March 31, 2014
Previous year	The year preceding the year that contains the reference date.	January 1, 2013 – December 31, 2013
Same day week ago	The reference date minus 7 days.	May 8, 2014
Same date month ago	The date of the reference date in the month preceding the month that contains the reference date. Note If that date does not exist, the preceding date is used.	April 15, 2014
Same date year ago	The date of the reference date in the year preceding the year that contains the reference date. Note If that date does not exist, the preceding date is used.	May 15, 2013

Date Range	Description	Example
Same month quarter ago	The equivalent month in the preceding quarter from the month that contains the reference date.	February 1, 2014 – February 28, 2014
Same month year ago	The equivalent month in the preceding year from the month that contains the reference date.	May 1, 2013 – May 31, 2013
Same quarter year ago	The equivalent quarter in the preceding year from the quarter that contains the reference date.	April 1, 2013 – June 30, 2013

Sequence filter options

The following table describes the sequence filter options.

Option
Keep events that match
Discard events that match
Keep cases in which at least one event matches
Discard cases in which at least one event matches
Also match when there are other events in between
Filter item is enabled
Filter item is disabled

Sequence filter options examples

The first dataset contains the activities A, B, C, D and E. You want to filter the cases where the start activity is A and the end activity is D.

The following table shows the cases in the dataset.

Case ID	Activities			
	1	**2**	**3**	**4**
	D	A	A	E
	B	C	D	A
	A	D	C	D
Start and end activity follow each other directly	**N**	**N**	**Y**	**N**
Other events possible between start and end event	**N**	**Y**	**Y**	**Y**

The results of the filtering in the case where the start and end activity follow each other directly is case 3. The results of the filtering in the case where there are events possible between start and end event is cases 2, 3, and 4.

The second dataset contains the activities A, B, C, D, and E. You want to filter the events where the start activity is A and the end activity is D.

The following table shows the cases/events in the dataset.

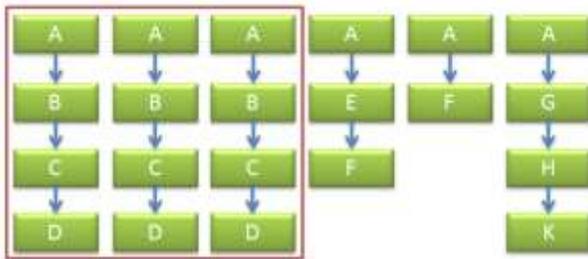| Case ID	Activities			
	1	**2**	**3**	**4**
	D	A	B	C
	B	C	A	A
	A	D	A	D
	C	D	D	B
				A
				D
				E
Start and end activity follow each other directly	**no case**	**no case**	**Case 3**	**Case 4**
			A	A
			D	D
				A
				D
Other events possible between start and end event	**no case**	**Case 2**	**Case 3**	**Case 4**
		A	A	A
		C	A	D
		D	D	B
				A
				D

Unique paths filter options

The following table describes the unique path filter options.

Option	Remark
Discard the selected percentage of cases	
Filter item is enabled	
Filter item is disabled	

Unique paths filter options example

A dataset contains six cases. You want to know which cases have the model that represents 50 percent of the cases. The following image shows the complete dataset. The cases that match the setting are shown in the frame.

Incomplete case filter options

The following table describes the available incomplete case filter options.

Option	Remark
Filter item is enabled	
Filter item is disabled	

Incomplete case filter example

A process contains four activities: Start, Work, Finish and Archive. You want to find the cases in which the activity Finish is not the end activity.

The following table shows the example dataset.

Case ID	Timestamp	Activity
case-06	1/1/2012	Start
case-06	3/30/2012	Work
case-06	6/10/2012	Finish
case-06	2/28/2013	Start
case-06	3/15/2013	Work
case-07	1/1/2012	Start
case-07	2/11/2012	Work
case-07	4/23/2012	Finish
case-07	6/17/2012	Start
case-07	7/21/2012	Work
case-07	8/5/2012	Work
case-07	9/7/2012	Finish
case-08	1/1/2012	Start
case-08	7/8/2012	Work
case-08	12/31/2012	Archive
case-09	1/1/2012	Start
case-09	1/3/2012	Work
case-09	2/18/2012	Finish
case-09	3/17/2012	Archive

The activities Work, Finish and Archive can all be end activities.

To add an Incomplete cases filter item, complete the following steps.

1. Select the start activity, in this case **Start**.

2. Select the **End** activities of the process, which can be all activities, but not **Finish**.

3. Click **Show filtered cases** to see which cases do not have the end activity **Finish**. As it shows in the example dataset table, the cases with the case ID "case-06", "case-08", and "case -09" do not have the Finish activity as end activity.

Separation of duties violation options

The following table provides an overview of the available options for separation of duties.

Option	Remark
Keep events involved in violation	
Discard events involved in violation	
Keep cases with at least one violation	
Discard cases with at least one violation	
Check SoD violations globally (across cases)	
Only check SoD violations within cases	
Filter item is enabled	
Filter item is disabled	

Separation of duties example

A business process contains the activities **Approve invoice** and **Pay invoice**. The same person cannot execute these activities.

The following table shows the example dataset.

Case ID	Timestamp	Activity	Executor
case-10	1/1/2005	Approve	Peter
case-10	2/20/2005	Pay	John
case-11	8/18/2005	Approve	Peter
case-11	1/1/2005	Pay	Peter
case-12	2/20/2005	Approve	John
case-12	3/20/2005	Pay	John
case-13	8/18/2005	Approve	John
case-13	1/1/2005	Pay	Peter

If you want to know which cases contain a separation of duties violation, complete the following steps.

1. In the **Add Separation of Duties violations filter item** page, select the activity attribute and executor attribute from the drop-down lists.

2. Select the **Scope** option you prefer.

3. Click **Next**.

4. Select **Approve** as first activity and **Pay** as second activity.

5. In the filter item options, select **Keep cases with at least one violation**.

6. Optional. If you click **Show filtered cases**, you see which cases contain a separation of duties violation. The cases with Case ID "case-11" and "case-12" are cases that contain a separation of duties violation. Compare this result to the example dataset above.

Default user groups

The following table describes the default user groups.

Name		Folder and Process	Process Objects	Description
Anyone		No access	Read-only	The Anyone group is special in the sense that: • This group cannot be renamed or deleted. • Any user which is not assigned to a group or group which is not a member of another group is by default a member of the Anyone group. By default, users in this group do not have access to anything. You can use this group for instance to initially create users that you do not want to be active yet.
	Admin	Full access	Full access	Users in this group are typically administrators in Perceptive Process Mining and have full access to everything.
	Viewer	Read-only	Read-only	Users in this group can view all processes and process objects, but cannot save processes and process objects.
Folder/process manager		Full access	Read-only	Users in this group can access processes and process objects, but cannot save process objects. Typically, a user in this group is someone who manages folders, imports datasets and creates or imports processes, but does not analyze the data.
Process analyst		Read-only	Full access	Full access Users in this group have full access to processes and process objects, but cannot change the folder structure. Typically, a user in this group is someone who interprets the data from a business analysis perspective; performs mining and analysis tasks.
	ImageNow user	Unspecified	Unspecified (see Note)	This is a special group; users in this group are authenticated through Perceptive Content. Any user that successfully logs in is added to the Perceptive Content user group automatically. **Note** By default, the ImageNow user group is a sub group of both the Folder/process manager group and the Process analyst group.

Access rights types

The following table describes the access rights types.

Access right	Description
Unspecified	The rights of the group to which the user belongs are assigned or the access rights are inherited from the parent folder of the current process or folder.
No access	Deny access to the process.
Read-only	Allow a user to view a process.
Full access	Allow a user to view and mine a process.

Resolve access rights

Set access rights to a process or folder

When computing the effective rights that a user U has for a specific folder or a process X, the following procedure is applied.

- If user U has explicit rights in X (given by overrides) then those rights are used.
- If the user has specified default rights in X, then those are used.
- If the user is a member of groups G and T, and if G or T have rights in X, then the highest of those is taken.
- This same procedure is applied to resolve the rights of U in the parent folder of X.

Perceptive INTool command parameters

The following table describes the `create` Perceptive INTool command with filtering parameters.

Parameter	Definition	Example
--file	The file name you want to specify. The default file name format is Reflect_YYYY-MM-DD-THHMMSSZ.zip	intool --cmd create-reflect-dataset --file "My 2012 Process Mining Report"--process"Accounts Payable Workflow"
--process	The name of the workflow process. Use commas to separate the processes. This is a required parameter.	intool --cmd create-reflect-dataset --process"Accounts Payable Workflow, Human Resources Workflow, Accounts Receivable Workflow"
--start	The earliest date to include. If left blank, the report pulls the first date for which data is available.	intool --cmd create-reflect-dataset --process"Accounts Payable Workflow" --start"2012-01-01"
--end	The latest date to include. If left blank, the report includes all data up to the current date.	intool --cmd create-reflect-dataset --process"Accounts Payable Workflow" --file"My 2012 Process Mining Report" --start"2012-01-01" --end"2012-30-06"

Parameter	Definition	Example
--duration	The relative interval to include in place of a static start and end date. Enter an integer and one of the following interval codes. • **D** for days • **W** for weeks • **M** for months	intool --cmd create-reflect-dataset --process"Accounts Payable Workflow" --duration 6M
--max-rows	The maximum number of records to include.	intool --cmd create-reflect-dataset --process"Accounts Payable Workflow" --duration 6M --max-rows 5000
--brief	Generate a file that excludes the case-level attributes.	intool -cmd create-reflect-dataset --process"Accounts Payable Workflow" --duration 6M --max-rows 5000 --brief
--process-delimiter	The character to use when separating the workflow processes, which is useful in instances where your process names include comma characters. If you leave this parameter blank, a comma appears.	intool -cmd create-reflect-dataset --process"Accounts Payable Workflow, Human Resources Workflow, Accounts Receivable Workflow" --process delimiter ^

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